

REMARKS

Claims 1-13 are pending in the application; the status of the claims is as follows:

Claims 1, 3, and 6 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,184,853 B1 to Hebiguchi et al. ("Hebiguchi").

Claim 2 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Hebiguchi in view of U.S. Patent No. 6,501,454 B1 to Ozawa et al. ("Ozawa").

Claim 4 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Hebiguchi in view of U.S. Patent No. 5,526,014 to Shiba et al. ("Shiba").

Claims 7 and 8 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Hebiguchi in view of U.S. Patent No. 5,091,557 to Nagai et al. ("Nagai").

Claim 9 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Hebiguchi in view of U.S. Patent No. 6,243,061 B1 to Sandoe et al. ("Sandoe").

Claim 10 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Hebiguchi in view of U.S. Patent No. 6,602,563 B2 to Kobayashi et al. ("Kobayashi").

Claim 5 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the case claim and any intervening claims.

To date, no Notice of Draftsperson's Patent Drawing Review has been received. Applicants respectfully request receipt of this document when it becomes available. Please note that the original drawings filed in the patent application are "formal" drawings.

35 U.S.C. § 103(a) Rejections

The rejection of claims 1, 3, and 6 under 35 U.S.C. § 103(a), as being unpatentable over Hebiguchi, is respectfully traversed based on the following.

Claim 1 requires that the driver drive the at least four fields composing one frame so that a scanning order of the fields is discontinued at least once. An example of a discontinuous scanning order with four fields is 1-3-2-4.

In contrast, Hebiguchi does not disclose scanning the fields in a discontinuous order. The Office Action references column 8, lines 10-13 of Hebiguchi as disclosing a discontinuous order. In fact, column 8, lines 10-13 describe dividing a frame into three fields and displaying only one of the three fields at a time, a conventional, continuous interlaced scanning method. Further, if the two fields were not skipped, i.e., all three fields were scanned simultaneously, then the scanning would not be interlaced. That this is a continuous scanning order is clear in FIG. 6 of the Hebiguchi patent, which is described by column 8, lines 10-13. In FIG. 6, the first frame is divided into only three fields as opposed to the at least four required by claim 1. Turning to the first three lines G1, G2, and G3, in frame F1, G1 is scanned, while in frame F2, G2 is scanned, and in frame F3, G3 is scanned. As seen in frame F4, the pattern repeats, with G1 being scanned again. Thus, the scanning order of the fields is continuous: G1, G2, G3, G1, G2, G3, i.e., 1-2-3. Such a scanning order cannot be deemed discontinued at least once as required by claim 1. Further, with only three fields, it is impossible to create a discontinuous field scanning order. Hebiguchi discloses the order 1-2-3. This order can be inverted as 3-2-1, but this is similarly continuous. An order starting with field 2, such as 2-3-1 (2-3-1) or 2-1-3 (2-1-3) is the same as scanning orders of 1-2-3 and 3-2-1, respectively. It is because three fields cannot be scanned in a discontinuous order that claim 1 requires at least four fields.

The Office Action further references column 10, lines 16-24 as disclosing a discontinuous scanning order. In fact, column 10, lines 16-24 of Hebiguchi discloses that

with Hebiguchi's method of driving the fields "new problems arise in that flicker, line scrawling (a phenomenon in which fine streaks are displayed on the screen in such a manner as to flow), or the like occur." This is the very problem that the present invention solves by using a discontinuous scanning order. FIG. 15 of Hebiguchi that discloses the use of four fields, scans these four fields in a continuous order. In frame F1, R1 is scanned, followed by G2 in frame F2, B3 in frame F3, and R4 in frame F4, with R1 again being driven in frame F5 as the first repeated field. The resultant order is R1, G2, B3, R4, R1, G2, B3, R4, or more simply 1-2-3-4. This is clearly a repeated, continuous order, in contrast to claim 1 that requires a discontinuous scanning order. FIG. 19 of Hebiguchi likewise shows a continuous scanning order when five fields are used. In FIG. 19, the continuous scanning order is R1, G2, B3, R4, G5, R1, G2, B3, R4, G5, or more simply 1-2-3-4-5. Because Hebiguchi utterly fails to teach a driver that drives at least four fields composing one frame so that a scanning order of the fields is discontinued at least once, Hebiguchi cannot render obvious the invention of claim 1.

The Office Action asserts that the "difference between the teaching of the prior art of record and that of the instant invention is that the instant invention addresses a LCD which is capable of rewriting a screen at high speed[sic]." Claim 1 is directed to a discontinuous scanning order of fields. Claim 1 places absolutely no limitations on the scanning speed, only the scanning order. The Examiner is respectfully urged to consider FIGs. 6, 15, and 19 of Hebiguchi in conjunction with their corresponding description within Hebiguchi's specification rather than considering the words of the specification in isolation. It is only when both the text and the figures are considered together that the continuous scanning order of Hebiguchi becomes clear.

With respect to claim 3, the Office Action itself shows the continuous ordered scanning of the fields, but fails to appreciate that this order is continuous, in contrast to claim 3, which requires the scanning order to always be discontinuous. An example of a scanning order that is always discontinuous is 1-3-5-2-4-6. As stated in the Office Action and as shown in FIG. 15, Hebiguchi scans the fields in the order 1-2-3-4. The Office

Action incorrectly states that "the switching fields takes place after scanning only one line for each field at a time, consequently the scanning order is always discontinued after writing one line per field." [Emphasis added.] In fact, in writing each field, one fourth of all the lines are written. With the given example of 1440 lines, this means $1440/4$ or 360 lines are written in each field, not one. That every fourth line is being written in each field is clear in FIG. 15. In field F1, lines 1, 5, 9, ... are being written, i.e., lines $1 + 4n$, where $n \geq 0$. In field F2, lines $2 + 4n$ are written, in field F3, lines $3 + 4n$ are written, while in field F4, lines $4 + 4n$ are written. This explains why line 1440 is circled in frame F4 as $1440 = 4 + 4(359)$. Because one fourth of the lines are written in each field, only the first four lines need be considered. As is evident in FIG. 15, Hebiguchi writes line 1 in F1, line 2 in F2, line 3 in F3, and line 4 in F4, an obviously continuous order of 1-2-3-4. Thus, it is unclear how such an order could ever be considered always discontinuous as required by claim 3. Thus, Hebiguchi cannot render obvious the invention of claim 3.

Claim 6 depends from claim 1, which is nonobvious over Hebiguchi. Therefore, claim 6 is nonobvious over Hebiguchi for at least the same reasons as claim 1.

Accordingly, it is respectfully requested that the rejection of claims 1, 3, and 6 under 35 U.S.C. § 103(a) as being unpatentable over Hebiguchi, be reconsidered and withdrawn.

The rejection of claim 2 under 35 U.S.C. § 103(a), as being unpatentable over Hebiguchi in view of Ozawa, is respectfully traversed based on the following.

Claim 2 depends from claim 1, which is nonobvious over Hebiguchi. Therefore, claim 2 is nonobvious over Hebiguchi for at least the same reasons as claim 1. Further, Ozawa does not make up for this deficiency as Ozawa addresses how driving voltage margins can be maintained. Ozawa does not specifically address an order for scanning fields and thus cannot disclose or suggest a discontinuous scanning order of the fields. Therefore, the combination of Hebiguchi and Ozawa does not disclose or suggest the

discontinuous scanning order of the fields as required by claim 1. Thus, the combination of Hebiguchi and Ozawa does not render obvious claims 1 or 2.

Accordingly, it is respectfully requested that the rejection of claim 2 under 35 U.S.C. § 103(a) as being unpatentable over Hebiguchi in view of Ozawa, be reconsidered and withdrawn.

The rejection of claim 4 under 35 U.S.C. § 103(a), as being unpatentable over Hebiguchi in view of Shiba, is respectfully traversed based on the following.

Claim 4 includes the limitation that the driver successively scans the odd-numbered lines of the respective fields and then the even-numbered lines. In other words, the scanning order for claim 4 with four fields would be 1-3-2-4, while six fields would produce a scanning order of 1-3-5-2-4-6.

Claim 4 depends from claim 1, which is nonobvious over Hebiguchi. Therefore, claim 4 is nonobvious over Hebiguchi for at least the same reasons as claim 1. Further, Shiba does not make up for this deficiency as Shiba addresses the electronics used to drive a LCD. Shiba does not specifically address an order for scanning fields and thus cannot disclose or suggest a discontinuous scanning order of the fields. Therefore, the combination of Hebiguchi and Shiba does not disclose or suggest the discontinuous scanning order of the fields as required by claim 1. Thus, the combination of Hebiguchi and Shiba does not render obvious claims 1 or 4.

Accordingly, it is respectfully requested that the rejection of claim 4 under 35 U.S.C. § 103(a) as being unpatentable over Hebiguchi in view of Shiba, be reconsidered and withdrawn.

The rejection of claims 7 and 8 under 35 U.S.C. § 103(a), as being unpatentable over Hebiguchi in view of Nagai, is respectfully traversed based on the following.

Claims 7 and 8 include the limitation that the liquid crystals in the LCD have a memory property.

Claims 7 and 8 depend, either directly or indirectly, from claim 1, which is nonobvious over Hebiguchi. Therefore, claims 7 and 8 are nonobvious over Hebiguchi for at least the same reasons as claim 1. Further, Nagai does not make up for this deficiency as Nagai addresses the chemistry of the liquid crystals used in a LCD. Nagai does not address an order for scanning fields at all and thus cannot disclose or suggest a discontinuous scanning order of the fields. Therefore, the combination of Hebiguchi and Nagai does not disclose or suggest the discontinuous scanning order of the fields as required by claim 1. Thus, the combination of Hebiguchi and Nagai does not render obvious claims 1, 7, or 8.

Accordingly, it is respectfully requested that the rejection of claims 7 and 8 under 35 U.S.C. § 103(a) as being unpatentable over Hebiguchi in view of Nagai, be reconsidered and withdrawn.

The rejection of claim 9 under 35 U.S.C. § 103(a), as being unpatentable over Hebiguchi in view of Sandoe, is respectfully traversed based on the following.

Claim 9 includes a limitation related to when one starts scanning the next field relative to the previous field.

Claim 9 depends from claim 1, which is nonobvious over Hebiguchi. Therefore, claim 9 is nonobvious over Hebiguchi for at least the same reasons as claim 1. Further, Sandoe does not make up for this deficiency as Sandoe addresses a technique for driving LCDs permitting a wide range of gray-scales. Sandoe does not specifically address an order for scanning fields and thus cannot disclose or suggest a discontinuous scanning order of the fields. Therefore, the combination of Hebiguchi and Sandoe does not disclose or suggest the discontinuous scanning order of the fields as required by claim 1. Thus, the combination of Hebiguchi and Sandoe does not render obvious claims 1 or 9.

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Accordingly, it is respectfully requested that the rejection of claim 9 under 35 U.S.C. § 103(a) as being unpatentable over Hebiguchi in view of Sandoe, be reconsidered and withdrawn.

The rejection of claim 10 under 35 U.S.C. § 103(a), as being unpatentable over Hebiguchi in view of Kobayashi, is respectfully traversed based on the following.

Enclosed is a certified English translation of the original Japanese Patent Application No. 2000-338095, from which this application claims priority. The certified English translation should remove Kobayashi as prior art with respect to the present application. The original filing date of Japanese Patent Application No. 2000-338095 is November 6, 2000. This predates Kobayashi with its U.S. filing date of May 17, 2001.

The rejection of claim 10 therefore is ineffective without the inclusion of Kobayashi as the Office Action states Hebiguchi does not teach each of the limitations found in claim 10. Therefore, Hebiguchi, in the absence of Kobayashi, cannot render obvious the invention of claim 10.

Accordingly, it is respectfully requested that the rejection of claim 10 under 35 U.S.C. § 103(a) as being unpatentable over Hebiguchi in view of Kobayashi, be reconsidered and withdrawn.

The rejection of claims 11-13 under 35 U.S.C. § 103(a), as being unpatentable in the same manner as claims 6-8, is respectfully traversed based on the following.

Claims 11-13 depend from nonobvious claim 10 and are thus nonobvious for at least the same reasons as claim 10. Claims 7 and 8 were rejected over the combination of Hebiguchi and Nagai. As Nagai addresses the chemistry of liquid crystals, Nagai does not disclose, for example, the driving technique required by claim 10. Thus, claims 11-13 are nonobvious over the combinations found in the rejections of claims 6-8.

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Accordingly, it is respectfully requested that the rejection of claims 11-13 under 35 U.S.C. § 103(a) as being unpatentable in the same manner as claims 6-8, be reconsidered and withdrawn.

Objected to Claim 5

Claim 5 depends from claim 1. As described above, claim 1 is nonobvious over Hebiguchi due to Hebiguchi's failure to disclose or suggest a discontinuous field scanning order. Therefore, claim 5 is likewise considered nonobvious over Hebiguchi due to its dependence upon claim 1. Accordingly, it is respectfully requested that the objection to claim 5, be reconsidered and withdrawn.

CONCLUSION

Wherefore, in view of the foregoing remarks, this application is considered to be in condition for allowance, and an early reconsideration and a Notice of Allowance are earnestly solicited.

Any fee required by this document other than the issue fee, and not submitted herewith should be charged to Sidley Austin Brown & Wood LLP's Deposit Account No. 18-1260. Any refund should be credited to the same account.

If an extension of time is required to enable this document to be timely filed and there is no separate Petition for Extension of Time filed herewith, this document is to be construed as also constituting a Petition for Extension of Time Under 37 C.F.R. § 1.136(a) for a period of time sufficient to enable this document to be timely filed.

Any other fee required for such Petition for Extension of Time and any other fee required by this document pursuant to 37 C.F.R. §§ 1.16 and 1.17, other than the issue fee,

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